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THE JOHNS HOPKINS UNIVERSITY
SCHOOL OF HYGIENE AND PUBLIC HEALTH

"Health Organization in Colombia"

THESIS
For the Degree of
Doctor in Public Health

Presented by
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Baltimore, Maryland
May 15, 1922.

COLOMBIA

The Republic of Colombia covers an area of 476,916 square miles (1,235,214 square kilometers) with a population of 6,200,000 (census of 1912), equal to thirteen inhabitants per square mile (5.01 per square kilometer).

Three chains of mountains which cross the country produce a variety of climate and products, ranging from the temperate to the tropical. Coffee, cacao, sugar cane, tobacco and bananas are successfully grown and largely exported. The mineral wealth of the country has been but little exploited, although its emerald mines furnish the world's chief supply of these gems. Gold is found in every department, and silver, platinum, mercury, iron and lead also exist. Oil has recently been found in paying quantities.

HISTORICAL SKETCH

When Columbus, on his fourth and last voyage, had discovered Cape Gracias a Dios, on September 14, 1502, he sailed along the Colombian coast for a considerable distance, but did not make any attempt to settle the country or conquer the aborigines. It was left for Alonzo de Ojeda, who in the year 1508

was granted the land lying east of the Darien River, which was termed the Provincia of Uraba, to attempt the conquest of the country. Ojeda succeeded in establishing himself firmly along the coast, battling continually with the Indians; but all of his attempts to conquer the Chibcha kingdom, situated on the high plateau, were fruitless. In the year 1536 Jimenez de Quesada undertook the subjugation of the Chibchas and at the same time two other expeditions for the same purpose started from other points, that of Frederman and of Pizarr's first lieutenant, Belancazar. These three expeditions met on the plateau, and it was due only to the tact and the diplomacy of Quesada that strife was avoided. Having succeeded in this, he established friendly relations with the aborigines, a highly civilized people, similar to the Incas of Peru. He established his capital, the present city of Bogota, at the site of the old Chibcha capital and explored the country in all directions.

A governor general was appointed by Spain and the name changed to the Province of New Granada, and in the year 1717 it was made a viceroyalty. New Granada was successfully governed by twelve viceroys until the year 1810, when the last viceroy was deposed by the citizens of Bogota. On August 7th of 1819 the patriots, under the able leadership of General Simon Bolivar

and Santander utterly defeated the Royalist forces at Boyaca.

Bolivar succeeded in effecting a union between Venezuela and the former viceroyalty of New Granada and on the 17th of December, 1919, the new republic formally adopted the title of the "Republic of Colombia". The Republic joined the union in 1822, but when on December 17th, 1830, Bolivar died, the union was dissolved.

CONSTITUTION AND GOVERNMENT

By the Constitution adopted August 4, 1886, the Republic of Colombia abolished the Federal Union and the Sovereignty of the several states and adopted the unitary republican form of government, with legislative, executive and judicial branches.

The Senate and the House of Representatives, constituting the National Congress,are instructed with legislative power, the former chamber consisting of thirty-five and the latter of ninety-two members. Senators are elected indirectly for a term of four years by electors chosen for the purpose, and representatives are elected by direct vote of the people for a term of two years, at the rate of one for every 50,000 inhabitants. Congress meets at the capital, Bogata, every year on July 20th, for a period of ninety days.

The President is elected by direct vote of the people for a term of four years. There is no vice-president, but two designados, first and second, elected annually by the Congress, succeed the President in case of his absence, death or inability to serve.

The President is assisted by a cabinet of eight members, who are the heads of their respective departments:

Minister of the Interior
Minister of Foreign Affairs
Minister of Finance
Minister of War
Minister of Public Instruction
Minister of Agriculture and Commerce
Minister of Public Works
Minister of the Treasury

Under Decree No. 340 of 1910, the Republic has been divided into fourteen departments, three territories or "Intendencias", and seven "Comisarias" or special districts, as follows:

DEPARTMENTS	AREA SQUARE KILOMETERS	CAPITALS
Antioquia	11,305	Medellin
Atlantico	3.115	Barranquilla
Bolivar	66,865	Cartagena
Boyaca	8.630	Tunja
Caldas	11,500	Manizales
Cauca	25,000	Popayan
Cundinamarca	22,350	Bogota
Huila	45,688	Neiva
Magdalena	46,715	Santa Marta
Narino	116,000	Pasto
Norte de Santander	19,700	Cucuta
Santander	30,400	Bucaramanga
Tolima	18,755	Ibague
Valle	19,000	Cali

INTENDENCIES

Choco	Quibdo
Meta	Villavicencio
Providencia	San Andres

COMISARIAS

Arauca	Arauca
Caqueta	Florencia
Goajira	San Antonio
Putumayo	Mocoa
Vaupes	Calamar
Vichada	San Rafael

Executive authority in each department is vested in a governor appointed by the president, while the intendences and comisarias are governed by special commissioners. The provincial and district executive authorities are likewise appointed by the president, but municipal councils are elected by direct vote of the people.

The capital of the Republic is Bogota, with a population of about 150,000, situated in the interior of the country, on the temperate plateau, at an elevation of 8,564 feet. It lies in a healthful and productive region with higher mountain ranges surrounding it. The city of next importance in Colombia is Medellin, accessible by railway from Puerto Berrio, one of the Magdalena River ports. Its population is 79,146. Cali, with about 56,000 inhabitants, is considered one of the most advanced cities in the

Republic. Other cities are: Cartagena, with a population of 51,382, on the Carribbean Sea; Barranquilla (population 72,500) the head of the steamer service for the Magdalena River traffic; Manizales, a mountain town of about 36,000 people, at an elevation of 7,000 feet; and Santa Marta, on the Caribbean, the great fruit center of the country.

There is as yet no continuous railway system within the Republic, but there are many short lines at present engaged chiefly in local traffic, which, when their plans are fully carried out, will connect the coast on both the Atlantic and Pacific sides with the center of production.

Colombia has a fine system of waterways, the most important of which is the Magdalena, the only available outlet from Bogota to the Atlantic coast.

ORGANIZATION OF THE SERVICE OF HYGIENE

The organization and management of this service continued from 1911 until 1918, in charge of a corporation known as the Central Board of Hygiene, located in the capital of the Republic. In 1918 this board was abolished and replaced by a National Executive Board of Hygiene, in charge of a general directing physician, and assistant director, and secretary. To the director belongs the duty of directing, guarding and governing the public and private

hygiene of the nation, as well as the governing of the marine and fluvial sanitation, and the governing of the medical health service in every port. The national director of hygiene has extensive powers through the laws; the orders that he dictates are not subject to the approval of any other authority and have force by law; neither the ministers of state, nor the President of the Republic can censure any of his commands if they are within the law. The commission of hygiene of the National Academy of Medicine, composed of four physicians, two of them bacteriologists, acts as an advisory board of the national director.

In each one of the fourteen departments into which the Republic is divided, there is a departmental director of hygiene, who is subject to the national director, is appointed by him and is his agent to fulfill the sanitary requirements in each section of the country. They direct the hygiene section in their respective departments and in the towns, and their decisions are obligatory for both private citizens and those in authority. In the principal capital cities of the departments there is a local hygiene service, in charge of two hygienic physicians, a bacteriologist, a chemist and a municipal engineer. There is also a service for applying the antivariolous vaccine, which is obligatory throughout the entire Republic. Each town whose population

exceeds four thousand is obliged to maintain a municipal sanitary board, composed of one physician, the Mayor and one member of the council, as a commission to take charge of the health of the respective town.

The towns are obliged to meet the expenses of hygiene. When the resources are insufficient, the government of each department must also contribute. In case of an epidemic that might invade several towns and demand large sums of money, the national government is obliged to meet these expenses and to do everything that might be necessary to control the epidemic. In this case the National Executive Board of Hygiene appoints special commissions to take charge of investigating the infected regions, attending the sick, and fulfilling the prophylactic conditions that may be dictated.

All expenses that may be needed in order to take care of the health of the ports must be available from the national government.

To look after the sanitary service of the ports there is a personal physician who has at his disposal a corps of sanitary police. There is a chief physician called a quarantine inspector in the ports of the Atlantic Ocean, and another inspector in the ports of the Pacific Ocean. In each one of the ports there

is a health doctor. The quarantine inspectors of the ports, as well as these doctors, are subject directly to the National Director of Hygiene. In order to occupy these positions, it is required that the physicians should have a national diploma and possess a theoretical and practical knowledge of bacteriology.

Colombia has the following ports open to commerce in the Atlantic Ocean: Riohacha, Santa Marta, Puerto Colombia and Cartagena; and on the Pacific: Buenaventura and Tumaco; in all of them there is sanitary service. On the Atlantic the Nation has a central quarantine station established on an island near Puerto Colombia, fitted out with such apparatus for disinfecting as science demands, and it has the necessary buildings for complying with the quarantine regulations. In the port of Santa Marta there is an auxiliary quarantine station, and in every port there is suitably equipped Clayton apparatus. In this manner, since 1913, Colombia has been well fitted to fulfill the obligations required by the present quarantine conventions. The boats that come from infected ports are submitted to the prescriptions of these treaties. The quarantine authorities, and more especially those of the ports, are obliged to declare any case of yellow fever, plague, cholera, smallpox and typhus that presents itself

in the port, and thus record it in the manifests that they issue. They must so advise the quarantine inspector and the National Director of Hygiene, who communicates the declaration to the minister of foreign relations and to the consular agents. In every fluvial port there are also health doctors.

INFECTIOUS DISEASES SUBJECT TO QUARANTINE

PLAGUE. - In Colombia the Bubonic or Eastern Plague has never appeared. In 1914 there was discovered in some of the towns on the Atlantic Coast, several very serious cases of a disease that had all the clinical characteristics of a pestilent pneumonia. Notwithstanding the doubt as to the nature of the disease, the health department of Colombia made the declaration of plague in order to fulfill their obligations. Doctor Darling, of the Health Service of the Canal Zone, was of the opinion that it was a pneumococci of exceptional virulence, as that which they had occasion to observe in the South African mines. In two months the disease was completely exterminated.

Although, as had been said, Colombia has been free from plague, in the Pacific ports a constant campaign is conducted against rodents.

CHOLERA. - In the year of 1851 there was an epidemic of cholera in our ports on the Atlantic Coast. Since this epidemic

there has never been observed any case of this infection.

YELLOW FEVER. - The first epidemic that appeared after the discovery of America, took place in 1494; several years later it reappeared in the ports of Cartagena and Santa Marta and in several towns on the Atlantic Coast. In the interior of the country it appeared in 1830 carried by the steam boats that navigated in the Magdalena River; this invasion was coincident with the establishment of this navigation in said river. In 1857 yellow fever was again prevalent and continued several years in those coasts; it did not again appear until 1885 and later in 1900; both times it reached the interior through the movement of troops in the civil wars of those years. It has never appeared in places situated less than 1400 meters above sea level, which confirms the important observations of Doctors H. R. Carter and Guiteras as to the necessity of certain atmospherical pressure for the development of aedes calopus.

In October of 1915 yellow fever appeared in Buenaventura imported from one of the Pacific ports to the south of Colombia. There was immediately organized a health campaign against this fever under the direction of the inspector of the health department on the Pacific, Dr. J. Payan, and with the support of a

commission of experts, under the orders of Doctor Beberly of the Canal Zone, with whom a contract was made by Colombia for this purpose. In four months the epidemic was controlled completely, and from that time on the fight against the mosquito was organized in this port, in accordance with the prescriptions of Doctors Gorgas, Carter and Guiteras.

In May, 1920, two very serious cases of yellow fever made their appearance in Buenaventura, one of them fatal. This appearance coincided with the arrival of two sailing vessels from the port of Paita, at that time infected with yellow fever. Twelve days afterwards there were ten more cases, but in a mild form, without any deaths and treated as yellow fever infection. The port remained free of the fever up to the first of June. Fortunately, through the fight against the mosquito, sustained without interruption since 1915, the number of aedes calopus was considerably reduced, and was found to be below the "critical number" or minimum, which according to Doctor Gorgas is indispensable in order that yellow fever might be propagated in a locality where it is not epidemic. And not only was it not propagated, but as has been said, the other cases did not become serious.

Doctor M. Connor, in charge of the drainage of Guayaquil, visited Buenaventura four months ago and declared that

the medical service of the port and the campaign against the mosquito were organized in such a manner that he had no objections to make, and declared that if this sanitary campaign could be continued for another year in the same way, the stegomyia would disappear completely from this locality.

It is a proven fact that in none of the Colombian coasts has there been previously, nor has there been in the last few years, any epidemic source of yellow fever. Occasionally there used to arrive in our Atlantic ports some yellow fever from the West Indies or from Panama. These sections being drained, it has disappeared from our Atlantic ports since 1905, the year in which some cases were discovered in Cartagena. At Tumaco and Buenaventura, ports on the Pacific, the infection has come from Guayaquil and other southern ports; these being drained, we will not again have it on these coasts.

SMALLPOX. - When in the middle of the past century antivariolous vaccination was neglected, there was in Colombia serious epidemics of smallpox. The last took place in 1883. there were more than twenty-five thousand cases in the lowlands of Bogota with a high mortality, which reached 33 per cent in cold climates where the hemorrhagic form predominated. Since

then greater attention has been given to vaccination, which is at the present time obligatory throughout the Republic. In 1898 there was founded in Bogota a laboratory destined especially for the preparation of the cow pox, which is there prepared in glycerined pulp and in the dry form. Practice has demonstrated to us that this last form conserves its activity very well for more than three months, even in warm climates and in temperate, and that the lymph and glycerined pulp soon lose their activity in those climates. The dry vaccine has had good success in a proportion of 80 to 90 per cent in persons never vaccinated before.

The epidemics that have appeared recently in several departments have been so mild that only very exceptionally has there been an unfortunate case, to such an extent that last year there was in the Republic, in several sections of the country, fourteen hundred cases of smallpox with but four deaths.

In each department capital and in the provincial capitals there is organized an official service of antivariolous vaccination. The National Executive Board of Hygiene furnishes gratuitously all the cow pox necessary. In the present year sufficient vaccine has been produced for one million, one hundred thousand vaccinations. Only in one of our Atlantic ports (Riohacha) have they had smallpox, but the epidemic passed in a few months. In

every port vaccination is actively practiced.

TYPHUS. - The exanthematous typhus is rare in Colombia. Cases are apt to appear in the cold climates, but never in a serious or extensive epidemic form. In our ports it is almost never seen because the temperature of these is warm and not very favorable to the development of the louse (pediculus vestimenti).

LEPROSY. - This disease was unknown in our continent before the Conquest. The first case that was ever observed in our country was that of the Conqueror don Gonzalo Gimenez de Quesada, who died a leper. The number of persons afflicted with leprosy was progressively increased through lack of isolation and knowledge of the disease. From 1905 to 1907 official statistics were taken of the lepers of the country. Said statistics were amended from 1913 to 1915 and show that there were six thousand, five hundred and sixty lepers instead of the twenty thousand that had erroneously been calculated. Of those afflicted, five thousand, two hundred and ten are isolated in three hospitals for lepers, so that there are still thirteen hundred and fifty needing isolation, which in the course of the next year will be isolated.

The statistics show 47 per cent of the lepers to be men, 48 per cent to be women, and 5 per cent children. Leprosy is distributed thus, according to the statistics that they carry in the leprous hospitals:

Leprosy in tuberculous form (fimatoid) ... 60%
Leprosy in nervous form (afimotoid) 30%
Leprosy in mixed form 10%

Colombia has isolated 80 per cent of those afflicted with leprosy. The declaration of this disease is obligatory on the part of the physicians, both private and those in authority. All lepers are obliged to be isolated in one of the three hospitals that the Nation supports. It is prohibited to receive foreign lepers in our ports. If one arrives, he must return at the cost of the boat that brought him. If the leper should be a Colombian, he will be received and carried to one of the lazarettos.

Leprosy is found in all of our climes, but is more common in the temperate and moist climates (from 25 to 26 degrees). It has been observed that contagious cases are rare in the warm and dry climates, and these climes favorably modify the disease.

OTHER INFECTIOUS DISEASES

In Colombia pathology is as varied as its climates. This variety is determined by the high mountain chains that cross the

country. We have warm and tropical climates in the low valleys and on the coast, with temperature between 30 and 34 degrees centigrade; semitropical in the outskirts of the mountains and in valleys with an altitude of a thousand to fourteen hundred meters, with a temperature between 25 and 29 degrees centigrade; temperate climates in places with an altitude of fourteen hundred to eighteen hundred meters, with temperature between 18 and 24 degrees centigrade, and cold climates in greater altitudes of nineteen hundred meters and with a temperature between 5 to 17 degrees centigrade. There are only two seasons: Summer, or the dry season, and winter, or the rainy season. The sections that have cold climates are the most populated and in these the white race predominates, more or less mixed with the native. According to the census of 1912, the population issix million, two hundred thousand, distributed in races as follows:

White race, of Spanish origin,	40%
Mixed race	43%
Negro race	10%
Native race	7%

The diseases predominating are:

Malaria. - Prevalent in all climes except the cold. At the approach and the end of the rainy season is when it takes a greater expansion and has more intensity. In some swampy sections

real epidemics of malaria are apt to appear. In this year, the campaign against the mosquito has been initiated, especially in the ports of the Nation, employing the proceedings practiced in Cuba and Panama. Of great utility have been the labors of Doctors Gorgas, J. Guiteras and Carter, who serve us as guides. In each port this sanitary campaign is under the immediate orders of the health doctor, who receives instructions from the National Director of Hygiene. From the first of the coming year some of the rich petroleum regions will be in working condition and we will have at a very low price all the petroleum that may be necessary.

Dysentery. - In the warm and temperate climates the amibiana form appears with more frequency; in the others the bacilar form predominates; but in all climes both forms appear, at times in epidemic form with high mortality. The National Executive Board of Hygiene endeavors to control these epidemics, sending physicians, antidysenteric serum and emetin to the invaded regions.

Typhoid Fever. - In the cold climates and several places in the temperate, typhoid fever is discovered, and frequently in extensive epidemic form. It is especially dominant in the populated districts of these climes, where the water supply is defective. The lack of prophylaxis in the patients that do not go to the hospitals

contributes greatly to the contagion, and so the direct contagion from the sick to the well person is perhaps the principal cause of spreading typhoid, and to the fact that in some large towns it has taken an epidemic character. The mortality has been generally from 18 to 20 per cent. In Bogota there is a yearly average of 900 typhoid patients.

Since four years ago more attention is being given to the water supply in the principal cities. There are more than one hundred towns in which they have constructed or are constructing aqueducts with metal piping. They are establishing the disinfecting of the water by liquid chlorine in Bogota and in Barranquilla. The national government helps in the construction of aqueducts with annual sums of money.

In the principal cities the antityphoid vaccination has now been established, but they have not yet had time to form statistics to prove its results.

Eruptive Fevers. - Measles is the eruptive fever that follows in frequency smallpox. Generally there is very little mortality. At times it assumes an extensive epidemic character, without excepting any climate, but in the cold regions it is more serious on account of the pulmonary complications of the children.

Scarlatina is very rare, and when it does appear it never assumes a serious character.

Tuberculosis. - Since about thirty years ago, tuberculosis, previously rare in Colombia, has spread, especially on our coasts and in the regions with temperate climate. In the elevated regions it was very rare until a little while ago, but those afflicted, attracted by the excellence of the climate, have invaded the cold sections, where the disease is also spreading.

In order to fight this infirmity there have been created in the capitals of every department antituberculosis boards, which operate in accord with the National Executive Board of Hygiene, and whose duty it is to see that preventive measures are executed, to educate the people in these preventive measures by means of public conferences, by instruction in the schools, publication of folders and pamphlets. In thecapitals of the departments they are organizing dispensaries and sanitoriums, and there is a law that demands the declaration of the disease in certain cases. The national government supports with money these establishments, and has diredted that the aid that the government gives to the hospitals be employed in constructing pavillions especially to isolate tubercular patients.

In order to make this campaign more effective, there has been fomented the creation of Drops of Milk, which is already in

operation in many cities. One law has declared that the cities use part of their income to build houses for laboring people and the very poor, which also have the support of the national government. The houses must be built according to plans approved by the health department and the rules of hygiene fixed by the National Executive Board.

These measures, Drops of Milk and hygienic houses for poor working people, will cause the high infantile mortality to decrease, as in many cities it reaches fifty per cent of the total mortality, and children under one year of age die to the extent of thirty to forty per cent. The causes of these deaths are intestinal affections, malnutrition and the very poor hygienic condition in which they live.

Recurrent Fever. - (Relapsing Fever.) This is observed in our warm and temperate climates. The celebrated physician, Dr. Roberto Franco, was the first one to discover and verify this fever among us, and it is only fitting to state that in 1910 he published a work in which he insinuated the idea that yellow fever might be caused by a spirillum similar to that which causes recurrent fever.

In the climates of which we speak, recurrent fever is transmitted, according to Dr. Franco, by two insects that suck the

blood: The chinch (cimex lextrolarius) and the chirivico (orinthodorus turicata), which are very common in our country.

Uncinariasis. Through the patriotic initiative of Senor don Jesus del Corral, present minister of agriculture and commerce, the cooperation was secured of the Rockefeller Institute for the purpose of undertaking a formal campaign against this infection, which reigns epidemically in our warm and temperate climates. The working people of these climates are affected to the proportion of ninety percent, according to the investigations of the commission sent by the International Board of Health of the United States, which has been studying the infection in the department of Cundinamarca.

The Minister of Agriculture organized the campaign against uncinariasis in accord with Dr. Luis Shapiro, sent by the Rockefeller Institute. The Colombian Government has appropriated $100,000 in gold in the present year for this campaign, and the Institute is making an expenditure of $80,000 gold, for which it will be reimbursed by degrees. The Government is in charge of the drainage of the soil, and the chief physician of the uncinariasis section attends to the treatment of the disease and the direction of the campaign. This has been conducted with such intensity that from last July to the first of November they have succeeded in constructing more than six thousand water-closets in the fields of a single province, and

have treated fifteen thousand patients with success. Next year the campaign will be extended to other departments.

Bacteriological laboratories are now in operation in several cities. The principal of these is the Laboratory of Hygiene, established a few years ago in Bogota by the distinguished physicians and bacteriologists, Doctors Jorge Martinez S. and Bernardo Samper. On account of the elements that it possesses and the organization that they have, the laboratory can be considered as a complete establishment.

In addition, there is in Bogota the bacteriological laboratory of the Faculty of Medicine, the clinical laboratory of the hospital San Juan de Dios, directed by the able bacteriologist, Dr. Federico Lleras A., and which serves principally as a clinic for tropical diseases and is under the care of Dr. R. Franco, and the Municipal Laboratory, which is also clinical, and in it are effected analyses of foods and drinks.

A building is under construction and almost finished for the purpose of establishing in Bogota next year an official bacteriological and chemical laboratory, intended for the National Executive Board of Hygiene.

There are also laboratories now organized in Medellin and in Cartagena, and they are being established in other cities. They have arranged to erect a small laboratory in each of the principal marine ports sufficient for the study of tropical diseases.

Since about fifteen years ago the elemental instruction of hygiene is obligatory in the colleges and schools of the Republic. There are two texts written in a very clear and simple style, one for use in teaching in the normal and high schools and colleges, and which contains instruction in physiology; and a primer on hygiene intended for the primary schools and which is distributed annually.

Besides, the National Executive Board, as well as the departmental boards of hygiene, frequently publish in sheets and booklets instructions about infectious diseases, scholastic hygiene, hygiene in the homes, and about the consumption of food and alcoholic drinks.

Notwithstanding that our medical congresses and our academies have applied for it, a law for the repression of alcohol has not yet been obtained. The principal obstacle is that the production and consumption of alcoholic drinks is an important

source of income for the departments. In the present year they have issued a law which restricts and regulates the importation and sale of drugs, which like morphine, cocaine, etc., can form pernicious habits.

Death certificates must be issued, according to law, by graduate physicians. Without a certificate of this kind the burial of a body is not permitted without previously having an autopsy.

The formation of the health statistics of the Republic is just beginning. The National Executive Board of Hygiene has issued orders about this, but it is meeting with difficulty on account of the need of a law which requires the declaration of diseases, without which true medical statistics cannot be formed.

In regard to venereal diseases, they have established in the capital of the Republic, and in some of the departments, dispensaries and sanitoriums. Medical examination is made three times a week. There is a special police inspection destined to watch the patients and compel them to attend the examinations. A record is kept and certificates are issued with personal descriptions and photographs for identification. Confinement in

the hospital is obligatory for the patients most seriously afflicted that lack the means for medical treatment.

COMMENTS

The sanitary organization of the Republic of Colombia is one of the simplest among the countries of South America. It satisfies, at first glance, the greater part of the necessities in regard to hygiene. Particularly noteworthy is the fact that the National Director enjoys full power and that the enforcement of health law is not subject to any other authority.

In each one of the departments there is a representative of the sanitary authority. This can also be said of the provinces into which the departments are divided and of the cities and counties. In these the municipal commissions are made up of the mayor, a physician and two members named by the departmentmental director of hygiene.

The national administration of hygiene has studied the larger part of the problems referring to health and has written resolutions which attempt to control the spread of communicable disease as far as possible. These resolutions have the force of law and must be carried out in all the Colombian

territory. Undoubtedly, if they are carried out, the morbidity and mortality rates will be reduced. Unfortunately, there really does not exist either a national department or municipal organization charged to carry out the hygienic measures drawn up by the national administration of hygiene.

The duties of the national administration are the following, in accordance with Law 32 of 1918:

Leprosy: Etiology, prophylaxis and treatment.

Regulation of the medical and pharmacal professions.

Drugs, poisons and patent medicines.

Water supply, mineral water and bathing resorts.

Hygiene of foods, meats, milk and other foods, drinks and alcoholism.

Industrial and occupational hygiene.

Health of counties, towns and homes, and of barracks, prisons, hospitals, alms houses and orphan homes.

School and personal hygiene.

Epidemics: Disinfecting and quarantine service.

International sanitary police; sanitary stations for ocean and river ports.

Sanatoria.

Prophylaxis of tuberculosis and venereal diseases.

Endemic and epidemic tropical diseases.

Sanitary legislation.

Preventive and curative sera and vaccines.

Protection of infant health, outdoor clinics, and dispensaries.

Statistical and geographical studies of diseases.

Homes for laborers.

Epizootics and veterinary sanitary police.

In accordance with this law, congress has assigned to the national administration of hygiene obligations which can only be carried out in a department of health fully organized. It is absolutely impossible to accomplish all this work with two physicians, a clerk and a stenographer.

If we analyze some of the diseases we will see that there is a very high death-rate, due probably to the incomplete control measures and to the low efficiency of the actual organization.

TYPHOID FEVER is endemic in the temperate and cold regions and appears periodically in epidemic forms in thickly populated centres such as Bogota. From the character which the epidemics assume it is shown that the disease is spread principally by water, all of which is contaminated and distri-

buted without any treatment. In the city of Bogota the death-rate in the last few years was the following:

BOGOTA - TYPHOID FEVER DEATH RATE

Year	Number of Deaths	Rate per 100,000
1912	207	170.7
1913	207	169.7
1914	240	213.8
1915	175	141.6
1916	128	103.1
1917	151	105.0
1918	146	106.0
1919	411	298.0

TUBERCULOSIS. - Tuberculosis is found all over the country and is extending in an alarming manner on account of the absolute ignorance of the rules of public, domestic and personal hygiene among the people of the rural sections.

Bogota is considered as an ideal place for tuberculosis patients; it is here that the most serious conditions exist, for there are neither hospitals nor sanatoria where the health authorities of the city can place tuberculous patients. That they have not taken definite means to prevent the spread of the disease is a natural consequence.

There are no statistical data from which to get the death rate in the country. Bogota has a rate which fluctuates between 113.6 and 171.5 for each 100,000 inhabitants. This is the capital of the republic where hygienic conditions are better than in the greater part of the country.

BOGOTA- TUBERCULOSIS MORTALITY

Year	Deaths	Rate per 100,000
1912	208	171.5
1913	185	156.6
1914	189	153.7
1915	164	132.7
1916	145	113.6
1917	147	117.9
1918	216	156.6
1919	160	116.0

LEPROSY. - Leprosy has had a high rate of incidence. Colombia enjoys the unfortunate privilege of being the country with the highest rate for this disease in South America. The lepers are allowed by law to marry and raise families and bring their brothers and sisters to the leprosarium. For the provision of food there exists in each leprosarium a public market where healthy people can go to sell supplies. It frequently

happens at times when the government has not sent salaries that the patients go out from the leprosarium into the surrounding country.

While these conditions continue leprosy cannot be controlled and under present conditions, the leprosariums will not fulfill hygienic conditions. This is due as much to the lack of general organization as to the inefficiency of quarantine.

MALARIA. - Malaria is a disease which has great economic importance for Colombia. The most fertile and advanced regions are included in the territory where malaria prevails and prevents the carrying on of agriculture and industries. The disease assumes an epidemic character at the beginning and end of the rainy season.

DYSENTERY. - The amebic form is observed most frequently in the tropical and subtropical zones while the bacillary form is seen most frequently in the colder zones. Epidemics of both forms have occurred in all parts of the country. These conditions are the result of the customs of the inhabitants, who live in dirty, crowded houses and without sanitary

privies. The water in all these places is contaminated and flies and other insects are constant companions in all regions.

ERUPTIVE FEVERS. - After smallpox, measles is the most frequent disease, occurring alone or associated with whooping cough.

It is not compulsory to report contagious diseases except in the case of leprosy. The health authorities have not been able to convince the legislature of the benefits and importance of this. Without compulsory reporting of contagious diseases, the health administration cannot control these diseases in an intelligent manner.

Although the laws require the national administration of health to prepare mortality statistics, they do not provide central or rural clerks. The church maintains registers of baptisms, marriages and deaths but they are not compelled to give these out nor to permit the civil authorities to take copies.

INFANT MORTALITY. - The infant mortality is alarming. The deaths are attirbuted mainly to intestinal and respiratory infections caused by the poor hygienic conditions

under which they live and the poor nourishment which they receive. In Bogota from fifty to one hundred of the infants die before they are a year old.

VENEREAL DISEASES. - Venereal diseases exist especially in the centres of population, due to the lack of control of prostitutes and also the lack of education among the people. Religious ideals are opposed to the latter problem.

WATER SUPPLY AND SEWERAGE. - Only the largest cities have tried to provide a water piping system but in none of these have they tried to protect in an efficient way the source of this water to make it suitable for consumption before distributing it. In the rural districts, rivers, creeks, springs, and wells are used to supply the needs of the inhabitants. Contaminated water is used in the majority of all these cases. It is not surprising that water-borne diseases such as typhoid, the dysenteries and other gastro-intestinal infections occur so frequently.

The sewerage system is in a primitive state. Some of the large cities have sewers for storm water and sanitary sewage combined. The proprietors of the houses are compelled

to construct sewers and connect them with the main sewerage system, but the kind generally used are so defective that in the form in which they exist they are a danger to the water supply.

In the rural districts privies are few or do not exist. Those which exist are in poor condition, not protected from flies, and generally very near to wells. The national administration of health has drawn up resolutions which compel the inhabitants to construct privies and maintain them in a sanitary condition, but these resolutions remain without effect because they are not carried out.

FOOD. - This is one of the main sources of infectious diseases and infant mortality. Milk is produced under the poorest hygienic conditions. There is no control over the dairy farms nor places where milk is sold. The places where milk is customarily sold are the vestibules of the houses. Here the milk is subjected to all kinds of contamination and no precautions are taken to protect it from flies and no ice is used to preserve it.

Meats, vegetable and other foods are sold under the same conditions. Very few cities have clean markets and in

the stores the foods are exposed to flies. It frequently happens that persons with contagious diseases are found in these stores and the health authorities are indifferent.

The lack of physicians in the country and in the small towns is a serious menace. There are approximately fifteen hundred graduate physicians in the country and more than half are stationed in the centres of population. As a result, there are large expanses of country which lack entirely the service of a physician. In the valley of the Magdalena, the principal river of the country, there are more than 200,000 inhabitants who cannot get medical assistance. These unfortunate people are abandoned and if they become ill, they have no hope of being cured.

PLAN OF ORGANIZATION FOR THE FUTURE

At first sight, the ideal of a national health organization is the establishment of a ministry of hygiene and public health, as France has done, but in this manner the direction of hygiene is subject to political changes, and the result is a constant change of ideas, and in consequence a lack of uniformity in the work.

That which exists in Colombia is better, as experience has demonstrated that political ideas change, and the direction remaining separated from and indifferent to these changes, conserves its autonomy and maintains all of its employes in the exercise of their functions.

The centralization of the direction of hygiene has many advantages, the principal of which we might note as follows: Economy in work, uniformity in the lines of action and facility in control.

In this Republic the departments lack initiative, and they look to the national government for the control and organization of their problems; this psychological condition is one more argument in favor of the centralization of authority in hygiene.

Under modern conditions, the field of hygiene is so extensive and embraces so many activities that good administration is impossible without specialists in each one of the subjects. In addition, there is the need of advisory boards so that in case of difficult problems the resolutions and measures should have the control and support of the persons highest in authority. In this we should imitate the United States, whose local organization is one of the most advanced in the world.

The national direction, once it has the departments organized, will be able to enter in all the campaigns that may arise to combat the great social problems, but each one of these activities will be under the general direction and in the department to which it belongs. The fight against tuberculosis, for instance, will be a section of the department of contagious diseases. It will operate independently up to certain limits, but is not to be cut off from the general direction.

Of great importance is the reserve work, which means that without entering in any campaign, there will be a certain number of workers whose duty will be to make special investigations in such a manner that when the national government or the departments desire to undertake a control, there will already be the preliminary studies on which to base the later work.

The following can be considered as principal activities of the national direction of hygiene:

1. To control the work of all the hygiene and public health departments, including the quarantine of ports and international matters.

2. To assist the departments in those problems that by their importance in the future of the race and the dangers

that they carry for the rest of the country, create a national menace.

3. To maintain by means of a laboratory all the products that are of value in the treatment and prevention of contagious and communicable diseases.

4. To found a school of hygiene or a center of study for the purpose of preparing sanitarians, inspectors, nurses and trained employes for the different campaigns.

5. Demography, statistics and national medical geography.

6. Health legislation (health code).

As a logical consequence of the foregoing reflections, the national direction should organize their work with the assiatance of the following departments:

1. Department of Education.
2. Department of Laboratories.
3. Department of Preventable Diseases.
4. Department of Statistics and Legislation.
5. Department of Health Engineering.
6. Department of Inspection.
7. Department of Infant Welfare.
8. Department of General Administration.

DEPARTMENT OF EDUCATION

The most serious problem in Colombia is the lack of competent personnel for the organization of hygiene and public health administration. The national government and departmental assemblies are constantly making appropriations of money for the purpose of health campaigns, and these sums remain in the treasury through lack of specialists to take charge of the work. Most of the cities lack the fundamental necessities of hygiene for the same reasons.

In the universities, colleges and schools the emphasis given to the teaching of hygiene is so slight that this has been the greatest obstacle to the campaigns that have been undertaken.

The department of the national administration will establish a school, institute or center of hygiene which, working connection with the Faculty of Medicine, can grant the following titles: Health officers, certificates of hygiene, and will take great care in the organization of nurses.

It will cooperate with the board of public instruction for the purpose of organizing courses in hygiene in the schools and colleges.

It will organize a campaign of education in such a manner that by making use of practical demonstrations through the means of lectures, moving-picture views, etc., the public can be taught the most rudimental laws of hygiene in preparation for the effective labor of the other departments.

For the progress of the school of hygiene, the departments into which the Republic is divided should send a certain number of students and assume the expense of their support. The national government should also dedicate a part of its educational funds selecting in so far as it is possible those students that have from the primary schools excelled in their habits and inclinations in this branch of study.

DEPARTMENT OF LABORATORIES

This organization is so important that a board of hygiene cannot be conceived without having as a foundation the effective assistance of the sciences of bacteriology and chemistry. In the eighteenth century and up to the middle of the nineteenth, hygiene and public health existed, but their activities were limited to works of sanitary engineering,

isolation and quarantining of ports. It was with the discoveries of Pasteur and his successors that the great progress of the scientific control of diseases was initiated.

The purpose of the health department is the conservation of health and the prolonging of life, all of which is, to a large extent, the work of preventive medicine.

The foundation of these laboratories will be the basis of the studies initiated in the former department, and the most powerful aid for the department of contagious and preventable diseases.

In this department the following activities will be carried on:

(a) To study those diseases which in the judgment of the national board need special investigations in order to establish their nature and origin.

(b) To prepare serums, vaccines, and other biological products whose use may be of recognized efficacy in the treatment and prevention of diseases.

(c) To make analyses of the waters, drugs and foods throughout the entire country until the towns are able to do so.

(d) To promote the development of departmental and municipal laboratories, and once established to maintain them by means

of an up-to-date revision of the most practical methods of diagnoses, etc.

(f) To study epizootics and enzootics.

DEPARTMENT OF CONTAGIOUS DISEASES

In Colombia the attitude of the National Board of Hygiene in regard to contagious diseases has been one of expectancy. Only in cases of epidemics, in view of the panic which is developed, does it take any measures that tend to stamp out the disease that has become generalized. Usually, they send a few employes who apply or distribute some medicines, but they do not make any epidemiological investigations, nor do anything to combat the cause or the carrier by which the contagion has been produced. Neither do they educate the people in the prevention of subsequent infections. Another aspect of the problem is that the national government has undertaken general campaigns, such as the one against anchylostomiasis. These campaigns are not finding organized boards of hygiene in the towns and fail because in these cases the important thing is constant effort in the work and the education of the people.

The only correct way is to organize this department so that the aim may be "to prevent rather than cure".

The following campaigns should be included, but each one of them should form a separate section and enjoy certain autonomy:

(a) Tuberculosis: Dispensaries, sanitoriums, hospitald for advanced tubercular cases, agricultural colonies for those patients who have been cured and discharged from sanitoriums, colonies for debilitated children (marine, terrestrial and mountainous).

(b) Leprosy: Prevention and treatment, leprosy hospitals, agricultural colonies, etc.

(c) Malaria: Campaign against the mosquito, treatment and prevention.

(d) Venereal Diseases: Dispensaries, special hospitals, popular education, sex education. General and private prophylaxis.

(e) Anchylostomiasis.

Among the other activities of this department are:

(a) National medical geography.

(b) Sanitary code.

(c) Epidemiological investigations and reserve works.

(d) Treatment (Pasteur).

DEPARTMENT OF STATISTICS

At present there does not exist any statistics. The data in this matter are very poor and generally erroneous. The census is irregularly taken and in such a defective way that there is no guarantee as to its accuracy. The fact that people are all Catholic will favor the successful progress of this department, as there exist in the parish houses all the data concerning births, marriages and deaths. The government has not apparently been wise enough up to this time to take advantage of this circumstance.

Vital statistics are the most positive evidence of the value of the work executed by the health boards and departments. Through their labors more than anything else can best be appreciated the progress from one year to another and the final balance of an administration. From statistics we are able to gather conclusions of great value, not only for the present but for the future. By means of these we are able to tell how many lives have been saved, how many can be saved, and skillfully ascertain wherein lie the great problems and dangers of the nation. We may also derive from them the systems that should be employed to analyse and control them.

The knowledge of the birth-rate, death-rate, marriages,

etc., is the fundamental basis on which the hygienist determines and controls the great social needs.

A part of its functions will be the following:

(a) Every ten years to take the census of the country.

(b) To educate the departments in the system used.

(c) Sanitary demography throughout the country.

DEPARTMENT OF SANITARY ENGINEERING

As we have previously seen, the greatest sources of diseases are those which concern the conditions of environment. Fortunately, these diseases are the easiest to combat. Sanitary engineering takes care of this. With its aid the civilized nations have been able to control typhoid fever, malaria, cholera, yellow fever, dysentery, etc.

An evidence of the great importance of this department is the results obtained obtained in the Panama Canal Zone. This place, formerly uninhabitable on account of the great number of diseases, is today an attractive spot on account of its hygienic and sanitary conditions.

In one of our neighboring republics, the national government assumed the development and control of the more important works of sanitary engineering, and together with the

municipalities made a contract with a company specializing in this branch, and the results obtained have been of considerable significance.

Activities: The lines of public works which are under the supervision of this department are as follows:

1. Water supplies.
2. Sewage disposal.
3. The pollution of streams and public waters.
4. Plumbing; garbage disposal.
5. Drainage and nuisances.
6. Milk pasteurization.
7. Ventilating and lighting.
8. Housing.
9. Industrial hygiene.
10. Sanitary survey.
11. Education.

DEPARTMENT OF INSPECTION.

This department will have charge of marine and fluvial inspection, the sanitary inspection of railroads and the control over foods and drugs.

These three activities form an extensive program. On their execution depend to a great extent the health and prosperity of a nation.

Colombia is in great danger in that the country is surrounded by sources of yellow fever, cholera, etc. On sev-

eral occasions we have had epidemics that have devasted populous regions, entering by its two great ways of communication: The Magdalena River and the railroad of the Pacific have constantly introduced many diseases.

The inspection of foods, drugs and drinks is also of much importance. The country is flooded with patent medicines, the greater part of them compositions with opium base. Alcoholism is prevalent in all its forms, and its consequences are being felt in the great number of social parasites that there are. The jails, the insane asylums, and houses of refuge are filled with these unfortunates, innocent victims of our government which finds in the production of fermented drinks one of its greatest sources of income.

The production, transportation and sale of foods is done under very poor hygienic conditions, through which means many diseases are transmitted and epidemics are caused.

DEPARTMENT OF INFANT WELFARE

The children are the future of a nation. Upon their development depends the advancement of the people, and their care must be entirely a national work. Looking after their

physical, moral and intellectual development decreases the great number of abnormal children (deformed creatures, future criminals, those that are mentally deranged or precociously depraved, etc.) that abound in alarming proportions.

The activity of this department will consist in looking after the young from the time of pregnancy until they are found capable for work. It will establish dispensaries that will watch the mothers, administering to them adequate treatment in case of disease and providing them with rest and the necessary assistance at childbirth. Later follows proper control in feeding, and it is due to defects in this control that during the first year there is at present a mortality of fifty per cent. Many mothers abandon their children for economic reasons, leaving them in the hands of inexperienced persons, or they are obliged to give them most unsuitable foods causing their death. Later comes a period no less delicate, the school time. Many fail to attend on account of lack of food, and others come without breakfasting or with insufficient nourishment. In both cases education is impossible. "The children's bread" is today an obligation of all governments.

The manner of making medical visits is very defective

and practically without result. There is great necessity to establish dental clinics, to watch those that through organic or mental defects require special attention. With the money that the government is at present spending, this department can be maintained.

Lines of Work:- Child Hygiene is divided naturally into four divisions, according to the ages of the children, as follows:

1. Prenatal care of the mothers.
2. Infant welfare from birth to two years.
3. Work during the pre-school ages of the children to the sixth year.
4. Medical inspection of school children.

The vast organization that I have just sketched, when once in full and complete operation condition, should radically change the hygienic life and social betterment of the country. I well know that in order to equip such a complex organization it will require many years, but its realization will be a high honor for Colombia.